

What is claimed is:

1. A method for making a composite yarn, comprising:

stretching a strand of one or more elastomeric fibers in a range from 1.1X to at least 5X of a relaxed length of the strand;

aligning at least one hard yarn selected from the group consisting of synthetic fibers, natural fibers and a blend of synthetic and natural fibers, adjacent and substantially parallel to said stretched strand to form an aligned yarn;

applying a size material to said aligned yarn; and

drying or curing the size material to form a composite yarn.

2. The method of claim 1, further comprising entangling surface fibers of the at least one hard yarn aligned with said strand of one or more elastomeric fibers, wherein said entangling is done prior to applying a size material to the aligned yarn.

3. The method of claim 1, wherein the size material comprises a sizing agent and a wax.

4. The method of claim 3, wherein the strand comprises a spandex yarn of a denier of from 20 to 140, and wherein the hard yarn has a total denier of from 45 to 900.

5. The method of claim 3, wherein said sizing agent is selected from the group consisting of: starch, acrylic polymer, PVA and CMC, and wherein the concentration of wax is from 0% to 1% by weight.

6. The method of claim 3, wherein the sizing agent is a hot-melt polymer, and wherein said size material is applied to the aligned yarn in an amount from 3% and 6% by weight based on the aligned yarn pre-sized weight.

7. The method of claim 5, wherein the size material is dissolved in water to form a solution before the size material is applied to the aligned yarn, and wherein concentration of the size material in the solution is from 5% to 25% by weight.

What is claimed is:

1. A method for making a composite yarn, comprising:

stretching a strand of one or more elastomeric fibers in a range from 1.1X to at least 5X of a relaxed length of the strand;

aligning at least one hard yarn selected from the group consisting of synthetic fibers, natural fibers and a blend of synthetic and natural fibers, adjacent and substantially parallel to said stretched strand to form an aligned yarn;

applying a size material to said aligned yarn; and

drying or curing the size material to form a composite yarn.

2. The method of claim 1, further comprising entangling surface fibers of the at least one hard yarn aligned with said strand of one or more elastomeric fibers, wherein said entangling is done prior to applying a size material to the aligned yarn.

3. The method of claim 1, wherein the size material comprises a sizing agent and a wax.

4. The method of claim 3, wherein the strand comprises a spandex yarn of a denier of from 20 to 140, and wherein the hard yarn has a total denier of from 45 to 900.

5. The method of claim 3, wherein said sizing agent is selected from the group consisting of: starch, acrylic polymer, PVA and CMC, and wherein the concentration of wax is from 0% to 1% by weight.

6. The method of claim 3, wherein the sizing agent is a hot-melt polymer, and wherein said size material is applied to the aligned yarn in an amount from 3% and 6% by weight based on the aligned yarn pre-sized weight.

7. The method of claim 5, wherein the size material is dissolved in water to form a solution before the size material is applied to the aligned yarn, and wherein concentration of the size material in the solution is from 5% to 25% by weight.

8. The method of claim 6, wherein the hot-melt polymer is selected from the group consisting of: acrylate ester and methacrylate ester, and wherein the concentration of wax is from 0 % to 1% by weight.

9. A composite yarn, comprising:

at least one elastomeric fiber forming a strand with a total draft in a range from 1.2X to at least 6.2X of an original spun length of the strand;

at least one hard yarn selected from the group consisting of: synthetic fibers, natural fibers and a blend of synthetic and natural fibers, wherein said hard yarn is aligned adjacent and substantially parallel to said strand to make an aligned yarn; and

a dried or cured size material forming an adhesive that adheres the strand and hard yarn of the aligned yarn together.

10. The composite yarn of claim 9, wherein the strand is formed from a spandex yarn of a denier of from 20 to 140 before stretching, and wherein the hard yarn has a total denier of from 45 to 900.

11. The composite yarn of claim 9, wherein the size material comprises a sizing agent and a wax.

12. The composite yarn of claim 9, wherein the dried size material forms an adhesive coating on the aligned yarn.

13. An elastic woven fabric, comprising upon weaving and before final fabric finishing:

composite yarns of claim 9 and hard yarns in the warp; and composite yarns of claim 9 and hard yarns in the weft,

wherein the ratio of said composite yarns to said hard yarns is from 1:1 to 1:4 in both the warp and the weft.

14. An elastic woven fabric, comprising upon weaving and before final fabric finishing:

composite yarns of claim 9 and hard yarns in the weft; and
hard yarns in the warp,
wherein the ratio of said composite yarns to said hard yarns in the weft ranges from 1:1 to 1:4.

15. An elastic woven fabric, comprising upon weaving and before final fabric finishing:

composite yarns of claim 9 and hard yarns in the warp; and
hard yarns in the weft;
wherein the ratio of said composite yarns to said hard yarns in the warp ranges from 1:1 to 1:4.

16. An elastic knit fabric comprising upon knitting and before final finishing:

composite yarns of claim 9.

17. An elastic woven fabric after final finishing, comprising:

strands of bare, essentially untwisted elastomeric fibers in the weft that are substantially parallel and adjacent to hard yarns in the weft.

18. A garment comprising the elastic woven fabric of claim 17.

19. An elastic woven fabric after final finishing, comprising:

strands of bare, essentially untwisted elastomeric fibers in the warp that are substantially parallel and adjacent to hard yarns in the warp, wherein the ratio of said elastomeric fibers to hard yarns in the warp ranges from 1:2 to 1:4.

20. A garment comprising the elastic woven fabric of claim 19.